

CASE Introduction to Agriculture, Food and Natural Resources

Course Description

Introduction to Agriculture, Food, and Natural Resources is an introductory course designed to teach students about the world of agriculture, the pathways of study they may pursue, and the science, mathematics, reading, and writing components they will use throughout the CASE™ curriculum. Students will explore career and post-secondary opportunities in each area of the course. Students’ experiences will involve the study of communication, the science of agriculture, plants, animals, natural resources, and agricultural mechanics. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

Course Code 018060

Program of Study to which the course applies

CASE: Curriculum For Ag Science Ed Certified, this course can also be offered in place of 011000 Intro to Agriculture, Food and Natural Resources.

Course Content		Reference/Source	Crosswalk to Common Core Academic Standards	Crosswalk to Nebraska Academic Standards	Crosswalk Clarification
Standard 1	The Circle of Agricultural Education	AFNR Unit 1			
Benchmark 1.1	Discover how agriculture provides basic needs, is a broad field of study, and varies across the United States.	AFNR Lesson 1.1			
Sample Performance Indicator 1.1.1	Determine if their basic needs are met after simulating the collection of resources during different situations.				
Sample Performance Indicator 1.1.2	Develop and keep an Agriscience Notebook to record and store information.				
Sample Performance Indicator 1.1.3	Interpret types of activities associated with agriculture from a case study about an agricultural entrepreneur.				
Sample Performance Indicator 1.1.4	Research top commodities produced in the United States and determine costs of food to consumers.				
Benchmark 1.2	Explore opportunities offered in FFA and Career Development Events.	AFNR Lesson 1.2			
Sample Performance Indicator 1.2.1	Explore educational and personal growth opportunities available through FFA membership.				

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Sample Performance Indicator 1.2.2	Compare types of dress and the role professional dress plays in success.	AFNR Lesson 1.3			
Sample Performance Indicator 1.2.3	Complete various components of ten Career Development Events.				
Benchmark 1.3	Evaluate employability skills and discover career pathways available in the agricultural industry.				
Sample Performance Indicator 1.3.1	Investigate the career opportunities available in agriculture.	AFNR Unit 2			
Sample Performance Indicator 1.3.2	Classify careers according to categories in agriculture.				
Sample Performance Indicator 1.3.3	Develop and maintain a career portfolio following a specific format.				
Sample Performance Indicator 1.3.4	Evaluate personal characteristics, strengths, and weaknesses.				
Sample Performance Indicator 1.3.5	Develop a Supervised Agricultural Experience (SAE) implementation plan.				
Standard 2	Students will develop communication skills.	AFNR Unit 2			
Benchmark 2.1	Demonstrate effective communication skills.	AFNR Lesson 2.1			
Sample Performance Indicator 2.1.1	Demonstrate verbal and non-verbal forms of communication in a charades-like game.	AFNR Lesson 2.2			
Sample Performance Indicator 2.1.2	Prepare and present a formal introduction.				
Sample Performance Indicator 2.1.3	Practice effective public speaking characteristics.				
Sample Performance Indicator 2.1.4	Develop and present an informative speech.				
Sample Performance Indicator 2.1.5	Write a vision statement and develop personal goals.				
Benchmark 2.2	Demonstrate basic parliamentary procedure motions and showcase collaborative presentations.				
Sample Performance Indicator 2.2.1	Work collaboratively to complete team building challenges.				
Sample Performance Indicator 2.2.2	Use proper parliamentary procedures to voice an opinion.				
Sample Performance Indicator 2.2.3	Demonstrate the proper procedures for making a main motion and an amendment.				
Sample Performance Indicator 2.2.4	Develop and present a group PowerPoint® presentation about agricultural careers to an audience.				

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Standard 3	Students will explore the science of agriculture.	AFNR Unit 3			
Benchmark 3.1	Identify the basics of scientific practices including lab equipment, procedures, methods and measurements.	AFNR Lesson 3.1			
Sample Performance Indicator 3.1.1	Identify and describe the uses of common laboratory equipment.				
Sample Performance Indicator 3.1.2	Measure distance, volume, mass, temperature, and density using the appropriate tools and scale.				
Sample Performance Indicator 3.1.3	Follow written procedures to complete a laboratory exercise.				
Sample Performance Indicator 3.1.4	Use equipment to collect data for an experiment.				
Sample Performance Indicator 3.1.5	Use a minimum of four science processes to design an experiment.				
Sample Performance Indicator 3.1.6	Perform a skit to demonstrate the science processes used in the experiment, laboratory safety, and group communication skills.				
Benchmark 3.2	Participate in pH lab activities and compile a lab report.	AFNR Lesson 3.2			
Sample Performance Indicator 3.2.1	Determine if a substance is an acid or a base using LabQuest® and a pH sensor.				
Sample Performance Indicator 3.2.2	Test the buffering ability of water and one additional substance.				
Sample Performance Indicator 3.2.3	Conduct an inquiry lab on the effect of pH on plant health.				
Sample Performance Indicator 3.2.4	Write a lab report based on findings of the inquiry lab.				
Benchmark 3.3	Recognize the basic structure and function of a cell.	AFNR Lesson 3.3			
Sample Performance Indicator 3.3.1	Identify and label the parts of a cell including each cell organelle function.				
Sample Performance Indicator 3.3.2	Determine the differences in structural parts between an animal and plant cell.				
Sample Performance Indicator 3.3.3	Demonstrate the correct use of a microscope.				
Sample Performance Indicator 3.3.4	Prepare a microscope slide and identify the nucleus of an onion cell.				

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Sample Performance Indicator 3.3.5	Extract the DNA bundles from strawberry tissue for observation.				
Sample Performance Indicator 3.3.6	Construct a DNA model and demonstrate how DNA replication happens in a cell.				
Sample Performance Indicator 3.3.7	Identify differences in physical features of people and trace their family traits.				
Sample Performance Indicator 3.3.8	Use mapping software to organize thoughts.				
Benchmark 3.4	Categorize information to develop classification skills.	AFNR Lesson 3.4			
Sample Performance Indicator 3.4.1	Classify objects based on their physical characteristics.				
Sample Performance Indicator 3.4.2	Categorize animals by gender and species.				
Sample Performance Indicator 3.4.3	Develop a flowchart to classify 20 different tools.				
Sample Performance Indicator 3.4.4	Use a dichotomous key to identify ten types of trees.				
Standard 4	Students will generate an understanding of the agricultural world around us.	AFNR Unit 4			
Benchmark 4.1	Investigate the fundamentals of soil quality and particles.	AFNR Lesson 4.1			
Sample Performance Indicator 4.1.1	Conduct a sediment test to determine the particle sizes of the mineral matter and the presence of organic matter in a sample of soil.				
Sample Performance Indicator 4.1.2	Investigate the effects organic matter has on soil porosity and soil air holding capacity.				
Sample Performance Indicator 4.1.3	Conduct an investigation of soil deposition caused by water.				
Benchmark 4.2	Determine how soil characterisitcs impact horizons.	AFNR Lesson 4.2			
Sample Performance Indicator 4.2.1	Conduct tests to determine soil texture by feel.				
Sample Performance Indicator 4.2.2	Test soil permeability to understand the relationship between soil particle size and rate of water filtration.				
Sample Performance Indicator 4.2.3	Determine the texture, structure, and color of each horizon within a soil profile.				

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Benchmark 4.3	Explore the world of water including the water cycle, pollution and quality indicators.	AFNR Lesson 4.3			
Sample Performance Indicator 4.3.1	Play a game to simulate the journey of a drop of water through the water cycle.				
Sample Performance Indicator 4.3.2	Write and illustrate a story about what they learned regarding the journey a drop of water takes through the water cycle.				
Sample Performance Indicator 4.3.3	Conduct an experiment that models the flow of water over a landform.				
Sample Performance Indicator 4.3.4	Determine the spread of pollution from point and nonpoint sources.				
Sample Performance Indicator 4.3.5	Perform tests to determine water quality using the factors of temperature, pH, turbidity, dissolved oxygen, and total dissolved solids.				
Sample Performance Indicator 4.3.6	Design an experiment determining the quality of drinking water and conduct the experiment to determine its validity.				
Sample Performance Indicator 4.3.7	Write a lab report regarding their experimental findings.				
Benchmark 4.4	Synthesize the interactions of organisms and energy flow in an ecosystem.	AFNR Lesson 4.4			
Sample Performance Indicator 4.4.1	Simulate the flow of energy in an ecosystem.				
Sample Performance Indicator 4.4.2	Conduct an experiment to determine the interdependence of plants and animals.				
Sample Performance Indicator 4.4.3	Complete a WebQuest researching an ecosystem.				
Sample Performance Indicator 4.4.4	Develop a model and poster depicting the ecosystem they studied.				
Sample Performance Indicator 4.4.5	Record key points of ecosystems presented by classmates.				
Standard 5	Students will be introduced to the fundamentals of plant and animal biology.	AFNR Unit 5			
Benchmark 5.1	Investigate edible agricultural products,trends and safety.	AFNR Lesson 5.1			
Sample Performance Indicator 5.1.1	Document the plant and animal food products consumed in a twenty-four hour period.				

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Sample Performance Indicator 5.1.2	Determine the percentage of plant and animal food products they consume.	AFNR Lesson 5.2			
Sample Performance Indicator 5.1.3	Conduct an experiment to determine bacterial levels of meat samples when refrigerated, stored at room temperature, and cooked.				
Sample Performance Indicator 5.1.4	Observe and record growth of bacterial cultures.				
Sample Performance Indicator 5.1.5	Research the path a prepared food item takes from production to processing and present their findings to the class.				
Sample Performance Indicator 5.1.6	Solve a problem related to foodborne illness outbreak.				
Benchmark 5.2	Exhibit comprehension of plant parts, functions, germination, photosynthesis and respiration.				
Sample Performance Indicator 5.2.1	Identify and sketch the four basic plant parts.	AFNR Lesson 5.3			
Sample Performance Indicator 5.2.2	Describe the functions of plant parts.				
Sample Performance Indicator 5.2.3	Construct a model depicting the parts of a complete flower.				
Sample Performance Indicator 5.2.4	Conduct a germination trial to determine the germination rate of bean seeds.				
Sample Performance Indicator 5.2.5	Determine the presence of starch in plants that have received different light treatments.				
Sample Performance Indicator 5.2.6	Collect data on the rate of respiration and photosynthesis of plant leaves.				
Benchmark 5.3	Demonstrate plant needs including environmental conditions and nutrients.				
Sample Performance Indicator 5.3.1	Determine the relationship between water availability and turgor pressure.				
Sample Performance Indicator 5.3.2	Calculate growing degree days for two locations to determine crop maturity.				
Sample Performance Indicator 5.3.3	Research plant macronutrients and record the functions in plants, deficiency symptoms, and sources for each.				
Sample Performance Indicator 5.3.4	Design and conduct an inquiry experiment on one environmental factor to investigate the optimal growth range for a plant.				

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Sample Performance Indicator 5.3.5	Write a lab report and develop a presentation to report their findings from an inquiry experiment.				
Benchmark 5.4	Express knowledge of animal anatomy, internal body systems and selection criteria.	AFNR Lesson 5.4			
Sample Performance Indicator 5.4.1	Study and learn the basic anatomical parts of an animal.				
Sample Performance Indicator 5.4.2	Develop a poster of the external anatomy of an animal that will be used to teach others.				
Sample Performance Indicator 5.4.3	Make decisions based on given priorities and criteria, and analyze objects as they compare ideal criteria.				
Sample Performance Indicator 5.4.4	Evaluate a class of market hogs based on specific priorities.				
Sample Performance Indicator 5.4.5	Make a concept map of the internal body systems and their relationships.				
Benchmark 5.5	Identify proper animal care practices and ethical considerations.	AFNR Lesson 5.5			
Sample Performance Indicator 5.5.1	Research and identify the six essential nutrients and the functions of each.				
Sample Performance Indicator 5.5.2	Classify feedstuffs according to their nutrient value.				
Sample Performance Indicator 5.5.3	Conduct an experiment to demonstrate the effect of insulation on maintaining body heat.				
Sample Performance Indicator 5.5.4	Draw conclusions on the perceptions of stimuli based on observations of optical illusions.				
Sample Performance Indicator 5.5.5	Determine ethical options to form an opinion on the use of meat for human consumption and related environmental impact issues.				
Standard 6	Students will explore the mechanics of agriculture.	AFNR Unit 6			
Benchmark 6.1	Summarize safety procedures and recognize emergency equipment.	AFNR Lesson 6.1			
Sample Performance Indicator 6.1.1	Work with their classmates to develop a list of ten safety rules to follow.				

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Sample Performance Indicator 6.1.2	Locate and determine the purpose of emergency equipment items located in the shop facility.				
Sample Performance Indicator 6.1.3	Research an agricultural hazard and demonstrate safe procedures to reduce the danger.				
Sample Performance Indicator 6.1.4	Film a short video demonstrating safe behavior.				
Benchmark 6.2	Explore alternative energies as related to agricultural commodities.	AFNR Lesson 6.2			
Sample Performance Indicator 6.2.1	Compare the combustion of two common fuels used for energy production.				
Sample Performance Indicator 6.2.2	Construct a solar energy system and compare the production of electricity under different light conditions.				
Sample Performance Indicator 6.2.3	Develop an educational display that will describe an alternative energy source and the impact agriculture has on that source.				
Benchmark 6.3	Utilize GPS to make discoveries about agricultural land.	AFNR Lesson 6.3			
Sample Performance Indicator 6.3.1	Draw a map and write directions from the school to their home.				
Sample Performance Indicator 6.3.2	Write directions based on the map of another student.				
Sample Performance Indicator 6.3.3	Describe parcels of land using the rectangular survey system and the metes and bounds system.				
Sample Performance Indicator 6.3.4	Use three points to triangulate a location.				
Sample Performance Indicator 6.3.5	Determine latitude, longitude, and altitude using a GPS unit.				
Sample Performance Indicator 6.3.6	Collect soil data and record the GPS coordinates of each soil location.				
Sample Performance Indicator 6.3.7	Use the Soil Web Survey to research information on each soil location.				
Sample Performance Indicator 6.3.8	Discuss issues pertaining to zoning and land use and present a persuasive debate at a mock town hall meeting.				
Benchmark 6.4	Practice English and metric measurements and implement skills into projects.	AFNR Lesson 6.4			

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Sample Performance Indicator 6.4.1	Use English and metric measurement systems to determine the length of objects.				
Sample Performance Indicator 6.4.2	Convert fractions and decimals.				
Sample Performance Indicator 6.4.3	Use proportions to solve problems and determine dimensions of objects drawn to scale.				
Sample Performance Indicator 6.4.4	Draw three-view plans of three-dimensional objects.				
Sample Performance Indicator 6.4.5	Write step-by-step directions for a coast-to-coast trip and calculate mileage and fuel cost.				
Sample Performance Indicator 6.4.6	Develop complete project plans for a birdhouse including researching the needs of the bird, designing, sketching, drawing, writing directions, and estimating a bill of materials.				
Standard 7	Students will contemplate their future role in agriculture.	AFNR Unit 7			
Benchmark 7.1	Consider how agriscience plays a role in world hunger.	AFNR Lesson 7.1			
Sample Performance Indicator 7.1.1	Write a brief proposing a plan to be used at a presentation on solving world hunger.				
Sample Performance Indicator 7.1.2	Review their work from the year and complete their Career Portfolio.				